

# Lars Gundlach

## Curriculum Vitae

Department of Chemistry & Biochemistry and  
Department of Physics & Astronomy  
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### Education

- July 2005                      Ph.D (Dr. rer. Nat.) in Physics, Free University Berlin/Germany  
Advisor: Prof. Frank Willig  
Dissertation title: *Surface Electron Transfer Dynamics in the Presence of Organic Chromophores*
- Oct 2000                      M.S. (Diplom) in Physics, University of Bremen/Germany  
Advisor: Prof. Peter Richter  
Dissertation title: *Quantisierung im Doppelmuldenpotential / Quantization of the double well potential*

### Professional Experience

- Jan 2018 –Jan 2019              Guest Researcher at the Fritz Haber Institute of the Max Planck Society, Berlin, Germany (9 month)
- Since September 2017              Associate Professor, Department of Chemistry & Biochemistry (75 %) and Department of Physics & Astronomy (25 %), University of Delaware
- July 2011 – August 2017              Assistant Professor, Department of Chemistry & Biochemistry (75 %) and Department of Physics & Astronomy (25 %), University of Delaware
- Nov 2006 – June 2011              Postdoctoral fellow, Rutgers University,  
Advisor: Prof. Piotr Piotrowiak
- July 2005 - Nov 2006              Postdoctoral fellow, Hahn Meitner Institute Berlin/Germany,  
Advisor: Prof. Frank Willig

## Honors

2018 Alexander von Humboldt Fellowship

## Professional Memberships

American Chemical Society  
American Physical Society  
German Physical Society

## Publications

Refereed Articles in Journals (ISI listed), h-index: 19 (google scholar)

(corresponding author(s) is (are) marked with an asterisk)

- 53) Somayeh Mortazavi\*, Rasoul Barri, Lars Gundlach, S. Ismat Shah\*: *Optical contrast calculations to quantify modifications induced on trilayer graphene by Ti:Sapphire laser thinning process*, Applied Surface Science **533** (2020) 147472  
[doi:10.1016/j.apsusc.2020](https://doi.org/10.1016/j.apsusc.2020)
- 52) Meng Jia, Yuying Zhang, Zhengxin Li, Emma Crouch, Samantha Doble, Joseph Avenoso, Han Yan, Chaoying Ni, Lars Gundlach\*: *A versatile strategy for controlled assembly of plasmonic metal/semiconductor hemispherical nano-heterostructure arrays*, Nanoscale **12** (2020) 17530-17537  
[doi: 10.1039/d0nr03551c](https://doi.org/10.1039/d0nr03551c)
- 51) Ryan Harmer, Hao Fan, Katherine Lloyd, Samantha Doble, Joseph Avenoso, Han Yan, Luis Rego\*, Lars Gundlach\*, Elena Galoppini\*: *Synthesis and Properties of Perylene-Bridge-Anchor Chromophoric Compounds*, The Journal of Physical Chemistry A **124** (2020) 6330-6343  
[doi: 10.1021/acs.jpca.0c04609](https://doi.org/10.1021/acs.jpca.0c04609)
- 50) Jolie C. Blake, Jesus Nieto-Pescador, Zhengxin Li, and Lars Gundlach\*: *Femtosecond Luminescence Imaging for Single Nanoparticle Characterization*, The Journal of Physical Chemistry A **124** (2020) 4583-4593  
[doi: 10.1021/acs.jpca.0c01775](https://doi.org/10.1021/acs.jpca.0c01775)
- 49) Somayeh Mortazavi\*, Mahmoud Mollabashi, Rasoul Barri, Lars Gundlach, Kevin Jones, John Q. Xiao, Robert L. Opila, S. Ismat Shah\*: *Ti:Sapphire laser irradiation of graphene oxide film in order to tune its structural, chemical and electrical properties: Patterning and characterizations*, Applied Surface Science **500** (2020) 144053  
[doi: 10.1016/j.apsusc.2019.144053](https://doi.org/10.1016/j.apsusc.2019.144053)
- 48) Swapnil Baral, Matthew Phillips, Han Yan, Joseph Avenoso, Lars Gundlach, Björn Baumeier, and Edward Lyman\*: *Ultrafast Formation of the Charge Transfer State of Prodan Reveals Unique Aspects of the Chromophore Environment*, The Journal of Physical Chemistry B **13** (2020), 2643-2651  
[doi: 10.1021/acs.jpccb.0c00121](https://doi.org/10.1021/acs.jpccb.0c00121)

- 47) Jie Zhang, Guangyang Lin, Peng Cui, Meng Jia, Zhengxin Li, Lars Gundlach, Yuping Zeng\*: *Enhancement-/Depletion-Mode TiO<sub>2</sub> Thin-Film Transistors via O<sub>2</sub>/N<sub>2</sub> Preannealing*, IEEE Transactions on Electron Devices **67** (2020), 2346-2351  
[doi: 10.1109/TED.2020.2988861](https://doi.org/10.1109/TED.2020.2988861)
- 46) Peng Cui, Jie Zhang, Meng Jia, Guangyang Lin, Lincheng Wei, Haochen Zhao, Lars Gundlach and Yuping Zeng\*: *InAlN/GaN metal–insulator–semiconductor high-electron-mobility transistor with plasma enhanced atomic layer-deposited ZrO<sub>2</sub> as gate dielectric*, Japanese Journal of Applied Physics **59** (2020), 020901  
[doi: 10.35848/1347-4065/ab67de](https://doi.org/10.35848/1347-4065/ab67de)
- 45) Guangyang Lin, Mengqiang Zhao, Meng Jia, Jie Zhang, Peng Cui, Lincheng Wei, Haochen Zhao, A. T. Charlie Johnson, Lars Gundlach and Yuping Zeng\*: *Performance enhancement of monolayer MoS<sub>2</sub> transistors by atomic layer deposition of high-k dielectric assisted by Al<sub>2</sub>O<sub>3</sub> seed layer*, Journal of Physics D: Applied Physics **53** (2019), 105103  
[doi: 10.1088/1361-6463/ab605b](https://doi.org/10.1088/1361-6463/ab605b)
- 44) Zhengxin Li\*, Meng Jia, Samantha Doble, Emily Hockey, Han Yan, Joseph Avenoso, Daniel Bodine, Yuying Zhang, Chaoying Ni, John T. Newberg, Lars Gundlach\*: *Energy Band Architecture of a Hierarchical ZnO/Au/CuxO Nanoforest by Mimicking Natural Superhydrophobic Surfaces*, ACS Applied Materials & Interfaces **11** (2019), 40490  
[doi: 10.1021/acsami.9b13610](https://doi.org/10.1021/acsami.9b13610)
- 43) Somayeh Mortazavi, Mahmoud Mollabashi, Rasoul Barri, Lars Gundlach, Kevin Jones, John Q. Xiao, Robert L. Oplia, S. Ismat Shah: *Ti:Sapphire laser irradiation of graphene oxide film in order to tune its structural, chemical and electrical properties: patterning and characterizations*, Applied Surface Science **500** (2019), 144053  
[doi: 10.1016/j.apsusc.2019.144053](https://doi.org/10.1016/j.apsusc.2019.144053)
- 42) Jie Zhang, Peng Cui, Guangyang Lin, Yuying Zhang, Maria Gabriela Sales, Meng Jia, Zhengxin Li, Christopher Goodwin, Thomas Beebe, Lars Gundlach, Chaoying Ni, Stephen McDonnell and Yuping Zeng\*: *High performance anatase-TiO<sub>2</sub> thin film transistors with a two-step oxidized TiO<sub>2</sub> channel and plasma enhanced atomic layer-deposited ZrO<sub>2</sub> gate dielectric*, Applied Physics Express **12** (2019), 096502  
[doi: 10.7567/1882-0786/ab3690](https://doi.org/10.7567/1882-0786/ab3690)
- 41) Baxter Abraham, Luis G.C. Rego\*, Lars Gundlach\*: *Electronic-Vibrational Coupling and Electron Transfer*, Journal of Physical Chemistry C **123** (2019), 23760-23772, Feature Article  
[doi: 10.1021/acs.jpcc.9b03849](https://doi.org/10.1021/acs.jpcc.9b03849)
- 40) Robson S. Oliboni, Han Yan, Hao Fan, Baxter Abraham, Joseph P. Avenoso, Elena Galoppini\*, Victor S. Batista\*, Lars Gundlach\*, Luis G. C. Rego\*: *Vibronic Effects in the Ultrafast Interfacial Electron Transfer of Perylene-Sensitized TiO<sub>2</sub> Surfaces*, Journal of Physical Chemistry C **123** (2019), 12599  
[doi: 10.1021/acs.jpcc.9b02106](https://doi.org/10.1021/acs.jpcc.9b02106)
- 39) Somayeh Mortazavi, Mahmoud Mollabashi\*, Rasoul Barri, Jesus Nieto Pescador, Lars Gundlach, Joseph P. Smith, Karl S. Booksh, and S. Ismat Shah\*: *Evaluating Single Layer Graphene Micropatterns Induced by Ti:Sa Laser Irradiation*, Physica Status Solidi A **215** (2018), 1800334  
[doi: 10.1002/pssa.201800334](https://doi.org/10.1002/pssa.201800334)
- 38) Mahsa Konh, Chuan He, Zhengxin Li, Shi Bai, Elena Galoppini, Lars Gundlach, Andrew V. Teplyakov\*: *Comparison of ZnO surface modification with gas-phase propionic acid at high and medium vacuum conditions*, Journal of Vacuum Science & Technology A **36** (2018), 041404  
[doi: 10.1116/1.5031945](https://doi.org/10.1116/1.5031945)

- 37) Rachel S. Riley, Megan N. Dang, Margaret M. Billingsley, Baxter Abraham, Lars Gundlach, Emily S. Day\*: *Evaluating the Mechanisms of Light-Triggered siRNA Release from Nanoshells for Temporal Control Over Gene Regulation*, *Nano Letters* **18** (2018), 3565-3570  
[doi: 10.1021/acs.nanolett.8b00681](https://doi.org/10.1021/acs.nanolett.8b00681)
- 36) Baxter Abraham, Hao Fan, Elena Galoppini, and Lars Gundlach\*: *Vibrational Spectroscopy on Photo-Excited Dye-Sensitized Films via Pump-Degenerate Four-Wave Mixing*, *The Journal of Physical Chemistry A* **122** (2018), 2039-2045  
[doi: 10.1021/acs.jpca.7b10652](https://doi.org/10.1021/acs.jpca.7b10652)
- 35) Chuan He, Baxter Abraham, Hao Fan, Ryan Harmer, Zhengxin Li, Elena Galoppini\*, Lars Gundlach\*, and Andrew V. Teplyakov\*: *Morphology-Preserving Sensitization of ZnO Nanorod Surfaces via Click-Chemistry*, *The Journal of Physical Chemistry Letters* **9** (2018), p. 768-772  
[doi: 10.1021/acs.jpcllett.7b033880](https://doi.org/10.1021/acs.jpcllett.7b033880)
- 34) Li Z., Jia M., Abraham B., Blake J.C., Bodine D., Newberg J.T., Gundlach L.\*: *Synthesis and Characterization of ZnO/CuO Vertically Aligned Hierarchical Tree-like Nanostructure*, *Langmuir* **34** (2018), p. 961-969  
[doi: 10.1021/acs.langmuir.7b02840](https://doi.org/10.1021/acs.langmuir.7b02840)
- 33) Abraham B., Nieto-Pescador J., Gundlach L.\*: *Analyte-Induced Spectral Filtering in Femtosecond Transient Absorption Spectroscopy*, *Journal of Luminescence* **187** (2017), p. 92-95  
[doi: 10.1016/j.jlumin.2017.03.003](https://doi.org/10.1016/j.jlumin.2017.03.003)
- 32) Bomberger C. C., Nieto-Pescador J., Lewis M. R., Tew B. E., Wang Y., Chase D. B., Gundlach L., Zide J. M. O\*: *Growth and characterization of ErAs:GaBi<sub>x</sub>As<sub>x-1</sub>*, *Applied Physics Letters* **109** (2016), 172103  
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- 31) Bao L., Gundlach L., Yu Z., Benedict J. B., Snoeberger R. C., Batista V. S., Coppens P., Piotrowiak P.\*: *Hot Hole Hopping in a Polyoxotitanate Cluster Terminated with Catechol Electron Donors*, *Journal of Physical Chemistry C* **120** (2016), p. 20006–20015  
[doi: 10.1021/acs.jpcc.6b06042](https://doi.org/10.1021/acs.jpcc.6b06042)
- 30) Abraham B., Nieto-Pescador J., Gundlach L.\*: *Ultrafast Relaxation Dynamics of Photoexcited Zinc-porphyrin: Electronic-vibrational Coupling*, *Journal of Physical Chemistry Letters* **7** (2016), p. 3151 - 3156  
[doi: 10.1021/acs.jpcllett.6b01439](https://doi.org/10.1021/acs.jpcllett.6b01439)
- 29) Blake J., Nieto-Pescador J., Li Z., Gundlach L.\*: *Ultraviolet femtosecond Kerr-gated wide-field fluorescence microscopy*, *Optics Letters* **41** (2016), p. 2462 - 2465  
[doi: 10.1364/OL.41.002462](https://doi.org/10.1364/OL.41.002462)
- 28) Li Z., Nieto-Pescador J., Carson A., Blake J., Gundlach L.\*: *Efficient Z-scheme Charge Separation in Novel Vertically-aligned ZnO/CdSSe Nanotrees*, *Nanotechnology* **27** (2016), 135401 (8pp)  
[doi: 10.1088/0957-4484/27/13/135401](https://doi.org/10.1088/0957-4484/27/13/135401)
- 27) Nieto-Pescador J., Abraham B., Li J., Batarseh A., Bartynski R. A., Galoppini E., Gundlach L.\*: *Heterogeneous Electron-Transfer Dynamics through Dipole-Bridge Groups*, *Journal of Physical Chemistry C* **120** (2016), p. 48 - 55  
[doi: 10.1021/acs.jpcc.5b09463](https://doi.org/10.1021/acs.jpcc.5b09463)
- 26) Eldridge P. S., Blake J. C., Gundlach L.\*: *Ultrafast probe of carrier diffusion and non-geminate processes in a single CdSSe nanowire*, *Journal of Spectroscopy* **2015** (2015), ID 574754

[doi: 10.1155/2015/574754](https://doi.org/10.1155/2015/574754)

- 25) Nieto-Pescador J., Abraham B., Pistner A. J., Rosenthal J., Gundlach L.\*: *Electronic State Dependence of Heterogeneous Electron Transfer: Injection from the S<sub>1</sub> and S<sub>2</sub> State of Phlorin into TiO<sub>2</sub>*, *Physical Chemistry Chemical Physics* **17** (2015), p. 7914 - 7923  
[doi: 10.1039/C5CP00296F](https://doi.org/10.1039/C5CP00296F)
- 24) Nieto-Pescador J., Abraham B., Gundlach L.\*: *Photo-induced Ultrafast Heterogeneous Electron Transfer at Molecule-Semiconductor Interfaces*, *Journal of Physical Chemistry Letters* **5** (2014), p. 3498-3507, invited perspective  
[doi: 10.1021/jz501541a](https://doi.org/10.1021/jz501541a)
- 23) Blake J. C., Eldridge P. S., Gundlach L.\*: *Spatial variation in carrier dynamics along a single CdSSe nanowire*, *Chemical Physics* **442** (2014), p. 128-131  
[doi: 10.1016/j.chemphys.2014.04.011](https://doi.org/10.1016/j.chemphys.2014.04.011)
- 22) Myahkostupov M., Pagba C. V., Gundlach L., Piotrowiak P.\*: *Vibrational State Dependence of Interfacial Electron Transfer: Hot Electron Injection from the S<sub>1</sub> State of Azulene into TiO<sub>2</sub> Nanoparticles*, *Journal of Physical Chemistry C* **117** (2013), p. 20485–20493  
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- 21) Bao L., Yu Z., Gundlach L., Benedict J.B., Coppens P., Chen H.C., Miller J.R., Piotrowiak P.\*: *Excitons and Excess Electrons in Nanometer Size Molecular Polyoxotitanate Clusters: Electronic Spectra, Exciton Dynamics and Surface States*, *Journal of Physical Chemistry B* **117** (2013), p. 4422-4430  
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- 20) Gundlach L.\*, Burfeindt B., Mahrt J., Willig F.: *Dynamics of ultrafast photoinduced heterogeneous electron transfer, implications for recent solar energy conversion scenarios*, *Chemical Physics Letters* **545** (2012), p. 35-39  
[doi: 10.1016/j.cplett.2012.07.011](https://doi.org/10.1016/j.cplett.2012.07.011)
- 19) Gundlach L.\*, Willig F.: *Ultrafast photoinduced electron transfer at electrodes: the general case of a heterogeneous electron transfer reaction*, *ChemPhysChem* **13** (2012), p. 2877–2881  
[doi: 10.1002/cphc.201200151](https://doi.org/10.1002/cphc.201200151)
- 18) Freitag M., Gundlach L., Piotrowiak P., Galoppini E.\*: *Fluorescence Enhancement of di-p-Tolyl Viologen by Complexation in Cucurbit[7]uril*, *Journal of the American Chemical Society* **134** (2012), p. 3358–3366  
[doi: 10.1021/ja206833z](https://doi.org/10.1021/ja206833z)
- 17) Yu Z., Gundlach L., Piotrowiak P.\*: *Efficiency and temporal response of crystalline Kerr media in collinear optical Kerr gating*, *Optics Letters* **36** (2011), p. 2904-2906  
[doi: 10.1364/OL.36.002904](https://doi.org/10.1364/OL.36.002904)
- 16) Gundlach L.\*, Letzig T., Willig F.\*: *Test Of Theoretical Models For Ultrafast Heterogeneous Electron Transfer With Femtosecond Two-photon Photoemission Data*, *Journal of Chemical Sciences* **121** (2009), pp. 561–574  
[doi:10.1007/s12039-009-0068-x](https://doi.org/10.1007/s12039-009-0068-x)
- 15) Gundlach L.\*, Piotrowiak P.\*: *Ultrafast Spatially-Resolved Carrier Dynamics in Single CdSSe Nanobelts*, *Journal of Physical Chemistry C* **113** (2009), p. 12162-12166  
[doi:10.1021/jp9013509](https://doi.org/10.1021/jp9013509)

- 14) Gundlach L. \*, Piotrowiak P. \*: *Femtosecond Kerr-gated wide-field fluorescence microscopy*, Optics Letters **33** (2008), 992-994  
[doi:10.1364/OL.33.000992](https://doi.org/10.1364/OL.33.000992)
- 13) Gundlach L. \*, Willig F.: *Time-resolved electron transfer from the excited state of anchored perylene into Ag(110)*, Chemical Physics Letters **449** (2007), p. 82–85  
[doi:10.1016/j.cplett.2007.10.022](https://doi.org/10.1016/j.cplett.2007.10.022)
- 12) Gundlach L. \*, Ernstorfer R., Willig F.: *Pathway dependent electron transfer in dye sensitised colloidal films of TiO<sub>2</sub>*, Journal of Physical Chemistry C **111** (2007), p. 13586-13594  
[doi:10.1021/jp066892s](https://doi.org/10.1021/jp066892s)
- 11) Gundlach L. \*, Ernstorfer R., Willig F.: *Dynamics of photoinduced electron transfer from adsorbed molecules into solids*. Applied Physics A **88** (2007), p. 481–495  
[doi:10.1007/s00339-007-4054-1](https://doi.org/10.1007/s00339-007-4054-1)
- 10) Gundlach L. \*, Ernstorfer R., Willig F.: *Ultrafast interfacial electron transfer from the excited state of anchored molecules into a semiconductor*. Progress in Surface Science **82** (2007), p. 355–377  
[doi:10.1016/j.progsurf.2007.03.001](https://doi.org/10.1016/j.progsurf.2007.03.001)
- 9) Gundlach L. \*, Szarko J., Socaciu-Siebert L. D., Neubauer A., Ernstorfer R., Willig F. \*: *Different orientations of large rigid organic chromophores at the rutile TiO<sub>2</sub> surface controlled by different binding geometries of specific anchor groups*, Physical Review B **75** (2007), p. 125320/1-8  
[doi:10.1103/PhysRevB.75.125320](https://doi.org/10.1103/PhysRevB.75.125320)
- 8) Ernstorfer R. \*, Gundlach L., Felber S., Storck W., Eichberger R., and Willig F. \*: *Role of Molecular Anchor Groups in Molecule-to-Semiconductor Electron Transfer*, Journal of Physical Chemistry B **110** (2006), p. 25383-25391  
[doi: 10.1021/jp064436y](https://doi.org/10.1021/jp064436y)
- 7) Gundlach L. \*, Ernstorfer R., Willig, F. \*: *Escape dynamics of photoexcited electrons at catechol:TiO<sub>2</sub>*. Physical Review B **74** (2006), p. 035324/1-10  
[doi:10.1103/PhysRevB.74.035324](https://doi.org/10.1103/PhysRevB.74.035324)
- 6) Piel J. \*, Riedle E., Gundlach L., Ernstorfer R., Eichberger R.: *Sub-20 fs visible pulses with 750 nJ energy from a 100-kHz NOPA*. Optics Letters **31** (2006), p. 1289 - 1291  
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- 5) Gundlach L. \*, Ernstorfer R., Riedle E., Eichberger R., Willig F.: *Femtosecond two-photon photoemission at 150 kHz utilizing two noncollinear optical parametric amplifiers for measuring ultrafast electron dynamics*. Applied Physics B **80** (2005), p. 727-731  
[doi:10.1007/s00340-005-1788-3](https://doi.org/10.1007/s00340-005-1788-3)
- 4) Gundlach L., Felber S., Storck W., Galoppini E., Wei Q., Willig F. \*: *Femtosecond two-photon photoemission probing electron injection from the excited singlet state of perylene attached to a long rigid tripod anchor-cum-spacer on rutile TiO<sub>2</sub>(110)*. Research on Chemical Intermediates **31** (2005), p. 39-46  
[doi:10.1163/1568567053146841](https://doi.org/10.1163/1568567053146841)
- 3) Töben L., Gundlach L., Ernstorfer R., Eichberger R., Hannappel T., Willig F. \*, Zeiser A., Förstner J., Knorr A. \*, Hahn P.H., Schmidt W.G.: *Femtosecond transfer dynamics of photogenerated electrons at a surface resonance of reconstructed InP (100)*. Physical Review Letters **94** (2005), p. 067601/1-4  
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- 2) Töben L.\*, Gundlach L., Hannappel T., Ernstorfer R., Eichberger R., Willig F.: *Dynamics of electron scattering between bulk states and the C1 surface state of InP (100)*. Applied Physics A **78** (2004), p. 239-245  
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- 1) Töben L.\*, Hannappel T., Eichberger R., Möller K., Gundlach L., Ernstorfer R., Willig F.\*: *Two-photon photoemission as a probe of unoccupied and occupied surface states of InP(100)*. Journal of Crystal Growth **248** (2003), p. 206-210  
[doi:10.1016/S0022-0248\(02\)01884-5](https://doi.org/10.1016/S0022-0248(02)01884-5)

#### Book Chapters

- 4) Gundlach L.: *Chemical Functionalization and Photo-Induced Charge Transport*, In: Wandelt, K., (Ed.) Encyclopedia of Interfacial Chemistry: Surface Science and Electrochemistry, vol. 4, p. 573–581, Elsevier, 2018  
[eBook ISBN: 9780128098943](https://doi.org/10.1016/B978-0-12-809894-3)
- 3) Willig F., Gundlach L.: *Redox Processes at Semiconductors - Gerischer Model and beyond*, In: G. Kreysa, R.F. Savinell, K. Ota (eds.), Encyclopedia of Applied Electrochemistry, p. 1786-1798, Springer, New York, 2014  
[doi: 10.1007/978-1-4419-6996-5](https://doi.org/10.1007/978-1-4419-6996-5)
- 2) Piotrowiak P., Huang L., Gundlach L.: *Ultrafast Optical Imaging and Microspectroscopy*, In: Piotrowiak P., Solar Energy Conversion: Dynamics of Interfacial Electron and Excitation Transfer, p.203, The Royal Society of Chemistry, Cambridge, 2013  
[doi:10.1039/9781849735445-00203](https://doi.org/10.1039/9781849735445-00203)
- 1) Wang L., May V., Ernstorfer R., Gundlach L., Willig F.: *Ultrafast Photoinduced Electron Transfer from Anchored Molecules into Semiconductors*, In: O. Kühn and L. Wöste (Ed.), Analysis and Control of Ultrafast Photoinduced Reactions, Springer Series in Chemical Physics Vol. 87, p. 437, Springer-Verlag, Berlin, 2007  
[doi:10.1007/978-3-540-68038-3\\_5](https://doi.org/10.1007/978-3-540-68038-3_5)

#### **Invited Presentations**

45. Drexel, Philadelphia, 5 June 2020, Online Seminar
44. University of Delaware, Quantum Materials Seminar 25 Feb 2019
43. DOE Solar Photochemistry meeting, Washington, D.C., 2-5 June 2019
42. Gerischer Electrochemistry Symposium, 15 Aug 2018
41. Donor Acceptor GRC, Salve Regina, 8 Aug 2018
40. Fritz Haber Inst. of the Max Planck Soc., Berlin, 14 May 2018
39. Lund University, 7 May 2018
38. University of Copenhagen, 4 May 2018
37. Purdue, West Lafayette, 7 November 2017
36. Drexel, Philadelphia, 20 October 2017
35. Femtochemistry XIII, Cancun, Mexico, 14-18 August 2017
34. TRVS, Cambridge, UK, 17-21 July 2017
33. DOE Solar Photochemistry meeting, Washington, D.C., 5-8 June 2017
32. Rutgers University, New Brunswick, 30 March 2017

31. American Physical Society MAS Meeting, Newark DE, 15 October 2016
30. Penn State University, 20 September 2016
29. Fritz Haber Inst. of the Max Planck Soc., Berlin, 30 May 2016
28. University of Buffalo, 11 May 2016
27. University of Rochester 10 May 2016
26. Johns Hopkins University, 16 Feb 2016
25. Pacifichem, Honolulu, 16 December 2015
24. Pacifichem, Honolulu, 15 December 2015
23. American Chemical Society, North Eastern Regional Meeting, Ithaca, 10 June 2015
22. Rutgers University, 7 May 2015
21. Emory University, 23 September 2014
20. University of Louisville, 31 January 2014
19. American Chemical Society Fall Meeting, Indianapolis, 8 September 2013
18. American Chemical Society Fall Meeting, Indianapolis, 12 September 2013
17. American Chemical Society Fall Meeting, Philadelphia, 23 August 2012
16. Eastern Analytical Symposium, 14 November 2011
15. University of Delaware, 9 November 2011
14. Yale University, 19. January 2011
13. University of Delaware, 2 December 2010
12. American Chemical Society Fall Meeting Boston, 26 August 2010
11. University of California, Berkeley, 25 January 2010
10. Johns Hopkins University, 14 January 2010
9. University of Pennsylvania, 12 November 2009
8. Femtochemistry IX, Beijing, 12 August 2009
7. SUNY Albany, 12 January 2009
6. Carnegie Mellon University, 21 November 2008
5. Ultrafast Phenomena XVI, 9-13 June 2008, Stresa, Italy
4. SPIE the international society for optics and photonics, Optics and Photonics, 27 August 2007, San Diego
3. SPIE the international society for optics and photonics, Optics and Photonics, 28 August 2007, San Diego
2. SPP1093 (Schwerpunktprogramm 1093) Closing Congress, 23 - 27 September 2006, Zeuthen, Germany
1. Columbia University, 6 April 2006, New York

## **Research Associates**

### Post-doctoral Associates

- Mark Mero, April 2012 – Aug 2012, now Research Fellow Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy



- Peter Eldridge, March 2013 – March 2015, now Senior Data Scientist at SparkBeyond

#### Graduate Students, Department of Chemistry and Biochemistry (CBC) and Department of Physics and Astronomy (DPA)

- Oludare Babawale (CBC)                      October 2019 - present
- Abhinav Prabhakar (CBC)                      October 2019 – present
- Meng Jia (CBC)                                      September 2018 - present
- Samantha Doble (CBC)                              October 2017 - present
- Han Yan (CBC)                                        June 2017 - present
- Joseph Avenoso (DPA)                              December 2016 – present
  
- Xingyu Shen, (DPA)                                November 2015 - 2016
- Jingjing Li (CBC)                                    December 2014 - 2015
- Zhengxin Li (CBC)                                 December 2013 – July 2019, now at Micron Technology Inc.
- Baxter Abraham (CBC)                            September 2012 – July 2018, now at Intel Corp., Oregon Campus
- Jolie Blake (CBC)                                 April 2012 – May 2017, now Postdoc at Chalmers University, Sweden
- Jesus Nieto, (DPA)                                April 2012 – May 2017, now at Intel Corp., Chandlers Campus
- Department adviser for Jing Zhang in Prof. J. M. O. Zide's group, Materials Science and Engineering (MSEG)

#### Master Students Supervised

- Matt Phillips (CBC)                                October 2017 – July 2019
- Alexander Carson (DPA)                            May 2014 – Nov 2015

#### Undergraduate Students Supervised

- Emma Crouch, August 2019 - present
- Emily Hockey, April 2018 – February 2019
- Joseph Camacho, November 2016 – May 2017
- Daniel Bodine, July 2016 –present
- Jake Wiley, UDRF Undergraduate Summer Student 2015
- Chelsea Cook (National Science Foundation, Research Experience for Undergraduates) May 2014 - August 2014 (now Graduate Student at The Catholic University of America)
- Andrew Korovich (CBC) June 2013 - Sept 2013 (now Graduate Student at Virginia Polytechnic Institute)
- Ethan Jahn Chemical and Biomolecular Engineering (CBE), April 2013 -Sept 2013 (now Graduate Student at Rice University)
- Matt Stapley (CBC) July 2012 - Sep 2013

#### Student Awards

- Samantha Doble: Dyer Award for Excellence in Teaching (2020)

- Baxter Abraham: DOE SCGSR Award for Research Visit at Argonne National Lab (2017)
- Jesus Nieto-Pescador: Daicar-Bata Best Graduate Student Paper Award (2016)
- Baxter Abraham: Brennie Hackley Jr. Award for Excellence in Research (2016)
- Baxter Abraham: Dyer Award for Excellence in Teaching (2016)
- Jolie Blake: ACS Division of Physical Chemistry Outstanding Student Poster Award in Philadelphia (2016)
- Jolie Blake: Dyer Award for Excellence in Teaching (2013)

#### Presentations by Research Group Members

- Meng Jia, AVS 65th International meeting, Long Beach, CA, October 21, 2018
- Han Yan, Poster, ACS Fall National Meeting, Boston MA, August 19-23, 2018
- Samantha Doble, Poster, ACS Fall National Meeting, Boston MA, August 19-23, 2018
- Joseph Avenoso, Poster, ACS Fall National Meeting, Boston MA, August 19-23, 2018
- Baxter Abraham, Talk, Argonne National Lab, Solar Energy Conversion Group Meeting, Porphyrinoids' Excited State Dynamics and Electron Transfer to TiO<sub>2</sub>, Lemont, IL, August 24, 2017
- Jolie Blake, Talk, NOBCChE (National Organization for the Professional Advancement of Black Chemists and Chemical Engineers), Nanotechnology/Nanoscience, Measuring Ultrafast Dynamics of Single ZnO Nanostructures by Ultraviolet Femtosecond Kerr-gated Wide-field Fluorescence Microscopy, Raleigh, NC, November 2016
- Jolie Blake, Talk, SPIE, the international society for optics and photonics, Optical Engineering + Applications, Ultrafast dynamics of single ZnO nanowires using ultraviolet femtosecond Kerr-gated wide-field fluorescence microscopy, San Diego, CA, 29 August 2016
- Jesus Nieto, Poster, American Chemical Society Fall Meeting, Physical Chemistry, Ultrafast Charge Transfer Dynamics at Interfaces, Philadelphia, PA, August 21, 2016
- Jolie Blake, Poster, American Chemical Society Fall Meeting, Division of Physical Chemistry, Measuring Ultrafast Dynamics of Single ZnO nanostructures by Ultraviolet Femtosecond Kerr-gated Wide-field Fluorescence Microscopy, Philadelphia, PA, August 2016
- Baxter Abraham, Talk, American Chemical Society, Division of Physical Chemistry, Dynamics of Natural & Artificial Systems For Energy Conversion: Insights Gained from Spectroscopic Methods & Theory, Philadelphia, PA, 21 August 2016
- Zhengxin Li, Talk, American Chemical Society Fall Meeting, Synthesis and Efficient Z-scheme Electron Transfer of ZnO/CdS<sub>Se</sub> Tree-like Nanostructure, Philadelphia, PA, 21-25 Aug 2016
- Baxter Abraham, Poster, Gordon Research Seminar, Vibrational Spectroscopy, Biddeford, ME, 17 July 2016
- Baxter Abraham, Poster, Gordon Research Conference, Vibrational Spectroscopy, Biddeford, ME, 21 July 2016
- Zhengxin Li, Talk, Electronic Materials Conference (EMC), Synthesis and Efficient Z-scheme Electron Transfer of a Vertically-aligned ZnO/CdS<sub>Se</sub> Tree-like Nanostructure, Newark, DE, 23 June 2016.
- Jolie Blake, Poster, National Research Conference on Women of Color in the Academy, Femtosecond Kerr-gated Microscopy for Measuring Ultraviolet Luminescence Dynamics, Newark, DE, 30 May 2016
- Jolie Blake, Peter Eldridge and Lars Gundlach Poster "Ultrafast Carrier Dynamics of CdS<sub>x</sub>Se<sub>1-x</sub> nanowire lasers by femtosecond Kerr-gated microscopy", NOBCChE (National Organization for the Professional Advancement of Black Chemists and Chemical Engineers) National Conference, Orlando FL, 26 September 2015
- Jesus Nieto, Talk, American Chemical Society National Meeting, Physical Chemistry, Effect of Energy Level Alignment on Heterogeneous Electron Transfer, Boston, MA, August 18, 2015

- Baxter Abraham, Poster “Molecular vibrations in heterogeneous electron transfer” TRVS (Time Resolved Vibrational Spectroscopy) Madison Wisconsin, 21-26 June 2015
- Zhengxin Li, Talk “Controlled Synthesis and characterization of ZnO Nanowires” Eastern Analytical Symposium, Somerset, NJ , 18 November 2014
- Jolie Blake, Poster, “Ultrafast carrier dynamics in defect sites of individual CdSSe nanobelts by femtosecond Kerr gated microscopy” Nanoday 2014, University of Maryland, 6 September 2014
- Jolie Blake, Poster, “Ultrafast carrier dynamics in defect sites of individual CdSSe nanobelts by femtosecond Kerr gated microscopy” 246th American Chemical Society National Meeting Indianapolis, 8 September 2014
- Peter Eldridge, Talk, “Spatially resolved carrier dynamics along a Single CdSSe Nanowire” ICPS Austin TX, 13 August 2014
- Peter Eldridge, Talk, “Ultrafast Microscopy of Single Nanowires” Eastern Analytical Symposium, Somerset NJ, 18 November 2013
- Baxter Abraham, Poster "Photophysics of a Soret-Excited Fluorinated Tetrapyrrole Macrocycle" American Chemical Society Indianapolis Meeting, Physical Chemistry Session, 11 September 2013
- Peter Eldridge, Poster, “Ultrafast Microscopy of Single Nanowires” PLMCN (Physics of Light Matter Coupling in Nanostructures) Crete, Greece, 29 May 2013

## Teaching Experience

|           |   |
|-----------|---|
| 2017-2020 | Chem 671, Quantum Chemistry I, Fall 2020<br>Chem 444, Physical Chemistry II, Fall 2020<br>Chem 672, Quantum Chemistry II, Spring 2020<br>Phys 667 & Chem 672, Non-linear Optical Spectroscopy, Spring 2019<br>Sabbatical, Spring 2018<br>Chem 671, Quantum Chemistry I, Fall 2019, Fall 2018, Fall 2017 |
| 2011-2017 | Chem 444, Physical Chemistry II, Spring 2013, 2014, 2015<br>Chem 671, Quantum Chemistry, Fall 2011, 2012, 2014, 2015, 2016<br>Phys 667, Advanced Spectroscopy, Fall 2013<br>Phys 201, Introduction to Physics, Spring 2017  |
| 2000-2011 | Advising of Undergraduate and Graduate Students, Hahn-Meitner Institute Berlin, Germany, and Rutgers University, USA  |
| 1997-2000 | Teaching Assistant, University of Bremen/Germany  |

## Service Activities

### University of Delaware

- Search committee for Associate University Librarian, Spring 2017
- ANL/UD Seed Grant proposal Reviewer

## Department of Chemistry and Biochemistry

- Teaching Assistants and Fellowship Committee, 2012-2017 & 2019-2020
- Sponsored Program Coordinator search committee, Spring 2019
- Faculty Search Committee, Inorganic Chemistry Search Fall 2019
- Space Committee, Fall 2018
- Recruiting booth staff at MARM 2019, ACS Fall Meeting 2016
- Faculty Search Committee, Physical Chemistry Search Fall 2016
- Instrument Shop Specialist search committee, 2016
- Physical Chemistry Seminar Committee Spring, 2012, Spring 2014, Fall 2015
- Graduation Committee member: Devon Boyne, Jing Zhao, Fei Gao, Jing Zhang, Joseph Smith, Justin Krasnomowitz, Siqi Shen, Chunting Zhang, Jing Zhao, Casey Kneale, Jodi Kraus, Yinan Zhang, Meng Jia, Wenbo Wu, Casey Rowland, Alexandra Antonio, Yao Zhang, Mahsa Konh, Gal Porat-Dahlerbruch, Dipak Balasaheb Sanap, Devon Haugh, Caelin Celani, Rachel McCormick
- Committee member for the Dyer Teaching Award, Spring 2012
- Committee member for the Hackley Award, Spring 2012
- Graduate Curriculum Committee, Fall 2011

## Department of Physics and Astronomy

- Faculty Search Committee, Quantum Materials Search Fall 2019
- Graduation Committee member: Harsha Kannan, Halise Celik, Zachary Bond, Nagitha Ekanayake, Vimal Deepchand, and Mitchell Dorrell, Weipeng Wu, Xinhao Wang, Mojtaba Taghipour Kaffash

## Department of Materials Science and Engineering

- Graduation Committee member: Xiangyu Ma, Eric Chen, Cory Bomberger
- Department adviser for Jing Zhang in Prof. J. M. O. Zide's group, Materials Science and Engineering

## Scientific Community

### Editorial Boards

- Editorial Advisory Board: The Journal of Physical Chemistry (term 2017-2019)
- Editorial Board Member: Frontiers in Physical Chemistry and Chemical Physics
- Editorial Board Member: Frontiers in Optoelectronics
- Editorial Advisory Board Member: The Open Condensed Matter Physics Journal (2008-2013)

### Professional Meetings and Symposia Organized

- Session organizer for the Eastern Analytical Symposium, Somerset, NJ, November 2013
- Session organizer 245th American Chemical Society National Meeting, Indianapolis, IN, August 2013

### Grant Proposal Reviewer

- Reviewer for National Science Foundation
- Reviewer for Department of Energy, Basic Energy Science
- Panel member for the NSF Graduate Research Fellowship Program 2015-2018

#### Journal Reviewer

- Journal of Physical Chemistry A, B, C, and Letters: 51 review assignments in total
- Physical Review Appl., B, X, and Letters: 94 review assignments in total
- JACS
- Nature: Light Science & Application
- Applied Surface Science
- Chemical Physics
- Physics Letters A
- Journal of Chemical Physics
- Journal of Renewable and Sustainable Energy
- Journal of Photochemistry and Photobiology A: Chemistry
- Journal of Physics: Condensed Matter
- Journal of the American Chemical Society
- Optics Express
- Thin Solis Films
- Frontiers
  
- Outstanding reviewer - Journal of Physical Chemistry Letters
- Outstanding reviewer - Applied Surface Science

#### Other Service Activities

- Contact person for the German Physical Society (DPG) at the APS meeting in Baltimore, Spring 2016